

DOCUMENT RESUME

ED 103 802

95

CG 009 758

TITLE Computer Assisted Occupational Search. Technical Report. Career Achievement Skills Training Program.

INSTITUTION Pontiac City School District, Mich.

SPONS AGENCY Michigan State Dept. of Education, Lansing.; Office of Education (DHEW), Washington, D.C.

REPORT NO P-7080-C

BUREAU NO V261041L

PUB DATE Jun 74

GRANT OEG-0-72-0749

NOTE 53p.; For related documents, see CG 009 753-757; Several pages may reproduce poorly

EDRS PRICE MF-\$0.76 HC-\$3.32 PLUS POSTAGE

DESCRIPTORS Career Choice; *Career Education; *Computer Oriented Programs; Junior High Schools; Occupational Choice; Occupational Guidance; *Occupational Surveys; Program Descriptions; *Vocational Counseling

IDENTIFIERS Career Achievement Skills Training Program; CAST; *Hollands Self Directed Search

ABSTRACT

This paper describes the use of Holland's Self Directed Search, an occupational survey. The instrument, in response to student difficulties in using the survey, was modified for junior high students and computerized. The standard version was administered to one group and the modified version to another group of ninth graders. Students using the modified version had fewer problems in understanding terminology and directions, and were able to complete the survey much more quickly. Conclusions and suggestions are included along with a lengthy description of the Computer Assisted Occupational Search (CAOS) system documentation. (Author/HMV)

ED103802

COMPUTER ASSISTED OCCUPATIONAL SEARCH
TECHNICAL REPORT
Developed by
Pontiac Public School Personnel,
Pontiac, Michigan,
as part of the Career Achievement Skills
Training Program.*

June, 1974

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*Michigan Vocational-Technical Education Services Project No. 7080-C, funded under U.S. Office of Education Project No. V-261041-L (OEG-O-72-0749), a supplementary allocation to the Michigan Department of Education under Part C of Public Law 90-576.

Acknowledgements

To Ginny Yensen, Marilyn Pomeroy, Marguerite Burdick and their students for their help in piloting CAOS.

To Stuart Packard for his assistance in revising CAOS.

To Al Pavlish for his hard work and help in developing CAOS.

To Judi Davis and Bobbi Morey for their help in key punching and delivering printouts to teachers.

My deepest appreciation,
Judy Battenschlag
Project Director

Purpose of the Report

The purposes of this CAOS Technical Report are described in the following objectives:

1. To provide the reader a summary of why and how CAOS was developed and piloted.
2. To provide the reader with an understanding of the outcomes of that pilot.
3. To provide the reader with some general conclusions and suggestions for use of CAOS.
4. To provide the reader with a description of the CAOS System Documentation.

The above objectives are discussed in these sections:

1. Summary of the Development and Pilot of CAOS - page 1
2. Outcomes - - - page 2
3. Conclusions and Suggestions -- page 4
4. CACS System Documentation - - page 6

Summary of the Development and Pilot of CAOS

Purpose

Before going on their internships, it was recognized that students need help in exploring their interests and in expanding jobs. It was decided an interest or occupational survey might be an interesting technique to use with CAST students in helping expand their information base before beginning to narrow. After looking at several occupational surveys, it was decided to use Dr. John Holland's "Self Directed Search." (Holland - 1970) since

1. it could easily be computerized for ease of scoring,
2. if computerized, it could be administered in half an hour,
3. it related activities, interests and self estimates to job alternatives, which paralleled the CAST program, and
4. it could be modified to use with junior high school students.

Dr. Holland was contacted and permission granted to use the instrument.

(See Appendix A)

One purpose of the "Self Directed Search" is to help students explore their interests and abilities in relationship to workers who have the same abilities and interests. Having to respond to the questions helps students look at specific activities which they like and competencies in which they excel. It also helps students become aware of the discrepancies between their interests and abilities.

Another purpose is to provide the students with a list of jobs which they can use as a basis for further exploration. The link between students' interests and their list of jobs is a job code. The job code is based on six job personality types - realistic, investigative, artistic, social, enterprising and conventional. All jobs included in the job bank are described by a three letter code combination. For example, the code ESC for salesman means that salesmen resemble people in Enterprising occupations most of all, that they resemble people in Social occupations somewhat less and people in Conventional occupations still less. In this way, the code provides a brief summary of what an occupation is like by showing it's degree of resemblance to three occupational groups.

Outcomes

The first step in exploring "The Self Directed Search" was to have a group of junior high teachers and counselors read the inventory and make recommendations for changes. Their first suggestion was to simplify the directions and some of the vocabulary words, so that they would be understandable to junior high students. Secondly, they recommended eliminating the students' mathematical computation section and to program the computer to compute the job code. Thirdly, they recommended including a section in which students could indicate their best liked interest area and educational level explored in the CAST program. This job classification system is taken from the book The Psychology of Occupations (Roe 1956)

The above changes were made and the revised "Search", now called Computer Assisted Occupational Search (CAOS) - (See Appendix B) was piloted with a group of 8th grade students. During the pilot, the students had problems in the following areas:

1. Understanding the format of the pages.
2. Understanding the directions in the Self Estimate section.
3. Understanding some of the activity and job title terms.

As a result of the pilot, Mr. Stuart Packard, Assistant Director, Field Services, initiated the following changes in the CAOS Inventory:

1. The format was simplified by having students indicate only positive responses to a question. Having two response boxes for negative and positive answers confused the students.
2. The directions in the Self Estimate section were clarified, so that the students would understand that they were evaluating themselves in relationship to particular job skills.
3. The Self Estimate scale was changed from seven points to five points plus zero. Thus, the scale was kept consistent with the five point scales used throughout CAST.
4. The activities and job titles were clarified using synonymous terms.
5. Some examples were changed to reflect female as well as male interests and to represent a broader range of activities and competencies which could be included in any of the six occupational categories.

6. In addition, the computer output was changed so that it:
 - A) printed out the students job code and all the jobs (with educational level) fitting under that category, (Example: ECS - Enterprising, Conventional, Social)
 - B) changed the job code to provide two other combinations of the same code (CSE) (SEC) and printed out a different set of jobs fitting under each different code combination, and
 - C) printed out all jobs falling under the interest area and educational level preferred by the students.
7. To use CAOS, the reader should first contact Dr. John Black at Consulting Psychology Press, 577 College Avenue, Palo Alto, California 94306.

Pilot

With these final revisions, CAOS and the manual version, "The Self Directed Search", were piloted with two groups of 25 ninth grade students, who had been through the CAST program. Both teachers read the instructions to the students, gave the students as much time as they needed and answered all their questions.

The group using CAOS completed the survey in a half hour and had no questions concerning directions or vocabulary. The other group took two hours to complete the survey and encountered numerous problems with the directions and the vocabulary. The teachers observed that the math computations in the manual version took the longest and were the most confusing for the students. In the computerized version the math computations were handled by the computer.

The students using the manual version had to look up and write down their own jobs while the students using the computerized version received not only a printout of jobs related to their job code but also received a "CAST" classification of the job titles as they related to their highest interest area and educational level. Although the students using the computerized CAOS had to wait a day for their printout list of jobs the computerized sheet served as a motivating factor and a concrete example of jobs they should be exploring.

Conclusions and Suggestions

From the various evaluations of the computerized "Self Directed Search", the following conclusions were drawn:

1. The students can complete the inventory in 1/4th of the time it takes to complete the manual version.
2. The printout has the jobs grouped using the same classification system as the CAST program.
3. Students are exposed to twice as many jobs as they would be on their own.
4. Computerized CAOS serves as a unique expanding tool and motivating tool.
5. Students can relate their values which they indicated by their CAOS responses to their values identified in the CAST program.
6. Students can access many written career sources through the DOT* number provided in CAOS printout.
7. Students can take their printout home and discuss it with their parents.
8. Students learn about job titles with which they are not familiar.
9. Students explore themselves as they answer the questions.
10. Students learn about each others interests.

Here are a few suggestions for the use of CAOS with or without the CAST program.

Without the CAST program

- 1) Introductory device for a career education program.
- 2) Used with a unit on values.
- 3) Used to begin a class discussion on jobs.
- 4) Used to access other career information.

With the CAST program

- 1) Used to expand jobs.
- 2) Used to reference information sources using the DOT classification number.

*Dictionary of Occupational Titles 1965

- 3) Used to expand values.
- 4) Used to compare internship decision with original printout list.
- 5) Used before and after CAST and comparison made.
- 6) Expand awareness of interest based on the job code categories.

CAOS SYSTEM DOCUMENTATION

- Language - FORTRAN IV
- Memory - 16K 1 Byte words
- Peripherals - Card Read
 - Line Printer
 - Random Access Disc Storage (200,000 Character)
 - Timing -- Limited by Printer (I/O bound)
 - Availability -- Limited by Copywrites
- Software - 3 -- Programs

Since the local school districts computer is primarily a remote job entry device, the memory capacity is limited. Therefore, it was necessary to write 3 seperate programs and call them when needed.

- 1) Create Disc file of occupations
- 2) a. Read Student Cards
 - b. Convert Data and Determine Preference
 - c. Create Disc file of Student Results
- 3) a. Read Student Data from Disc
 - b. Print occupation list -- Holland
 - c. Print occupation list --- Roe

- Future
Development
- Produce class summaries
 - Measure Convergence between Holland and Roe
 - Localize occupation list
 - Integrate Internship with occupation list
 - Dtudent characteristics/consistency, etc.

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PROGRAM I

Name - BLDOCF - Build occupation file

Input - Card - Occupation description

Output - Random access file of occupation
Printer file of Occupation

Input Format - Card

<u>Column</u>	<u>No. Char.</u>	<u>Description</u>	<u>Data Type</u>
1-3	3	Alpha occupation code	Alpha
4-10	7	DOT (Including decimal)	Numeric
11-50	40	Occupation title	Alpha
51-76	26	Blank	
77-79	3	Sequence title no.	Numeric
80	1	Update field	Numeric

Output Format - Random Access Disc-F-20

<u>Location</u>	<u>No. Char.</u>	<u>Description</u>	<u>Data Type</u>
1-3	3	Sequence number	Numeric
4-83	80	Card image	Alpha

This program creates a random access disc file which is accessed during the final place in printing the student profile. The order of these cards is determined by the sequence of jobs listed by Holland and Rowe.

The job codes are converted to equivalent numerical values. These values along with the number of jobs in category are stored in a matrix which in turn are used to create relative disc addresses. Therefore it is important that the number of codes, and number of jobs within each code be carefully determined and properly set in the data statement in the student profile program.

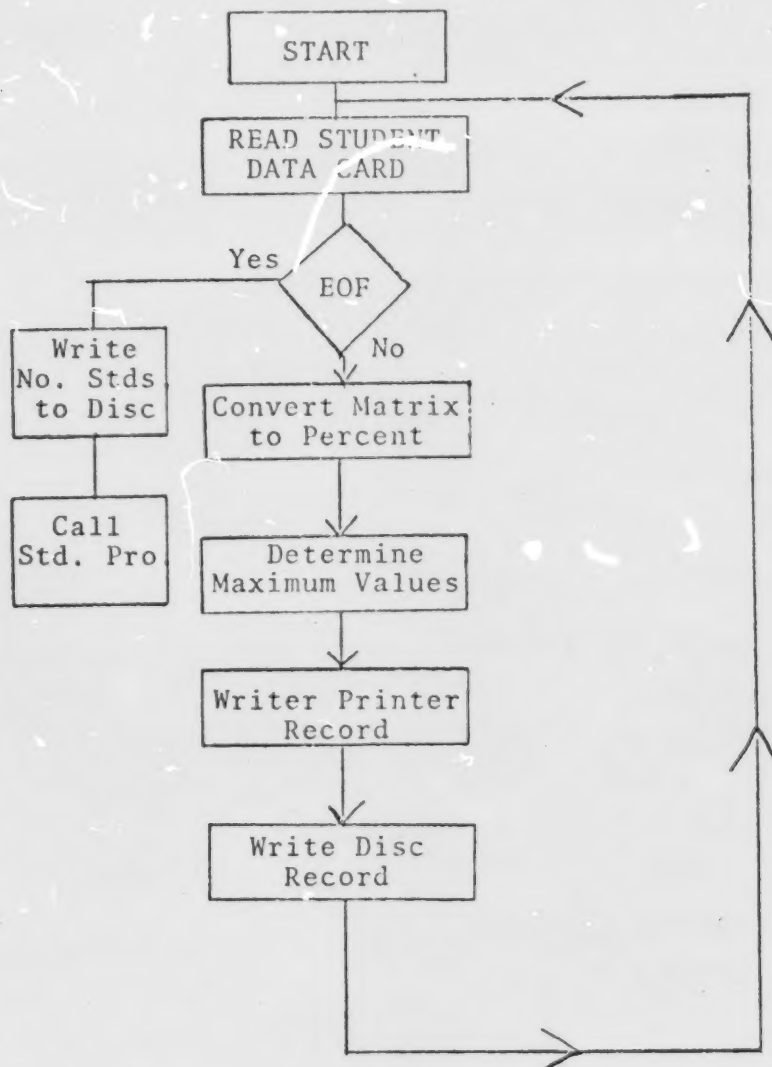
PROGRAM II

Name - BLDSMX - Build Student Matrix

Input - Card - Student Data (see student input for format)

Output - Disc - Random Access-Converted and Raw Matrix.
(See Program III for format of Disc file)

Output - Printer - Converted and Raw Matrix



Input Format - Student Data Cards

Computer Assisted Occupation Search

<u>Column</u>	<u>No. Char.</u>	<u>Description</u>	<u>Data Type</u>
1- 5	5	Student ID	Numeric
6-13	8	Last Name	Alpha
14-17	4	First Name	Alpha
18-19	2	Activities-Realistic	Numeric
20-21	2	Activities-Investigative	Numeric
22-23	2	Activities-Artistic	"
24-25	2	Activities-Social	"
26-27	2	Activities-Enterprising	"
28-29	2	Activities-Conventional	"
30-31	2	Competencies-Realistic	"
32-33	2	Competencies-Investigative	"
34-35	2	Competencies-Artistic	"
36-37	2	Competencies-Social	"
38-39	2	Competencies-Enterprising	"
40-41	2	Competencies-Conventional	"
42-43	2	Occupations-Realistic	"
44-45	2	Occupations-Investigative	"
46-47	2	Occupations-Artistic	"
48-49	2	Occupations-Social	"
50-51	2	Occupations-Enterprising	"
52-53	2	Occupations-Conventional	"
54	1	Self-Estimates-Mechanical	"
55	1	Self-Estimates-Scientific	"
56	1	Self-Estimates-Artistic	"
57	1	Self-Estimates-Teaching	"
58	1	Self-Estimates-Sales	"
59	1	Self-Estimates-Clerical	"
60	1	Self-Estimates-Manual	"
61	1	Self-Estimates-Math	"
62	1	Self-Estimates-Musical	"
63	1	Self-Estimates-Friendliness	"
64	1	Self-Estimates-Managerial	"
65	1	Self-Estimates-Office	"

Optional

66	1	Interest Area Rowe	Numeric
67	1	Educational Level	Numeric

PROGRAM II

The primary function of this program is to analyze the student responses and to determine or calculate the three highest interest areas. This is done by producing a matrix with the interest areas as the columns and the categories - activities, competencies, occupations, self estimate I and self estimate II as the rows. Since the range of values within the cells is a variable, this raw matrix of response is converted to percents in what is called the converted matrix. Totals for both matrices are calculated and printed as marginals. The computer then selects the three highest values and lists them under the matrix.

The row totals, column totals, name, student number, interest area and education level (these last two are optional used in the ROWE classification) are then written to disc as well as the last line of the printer output. This data is then read by the last program and the student profiles printed.

PROGRAM III

Name- BLDSPR- Building Student Profile
Input- Disk - Student Data
Output- Disk Occupation
 - Printer Listing

Input Format- -See Student Input card
 -Occupation Category Description

Output Format-

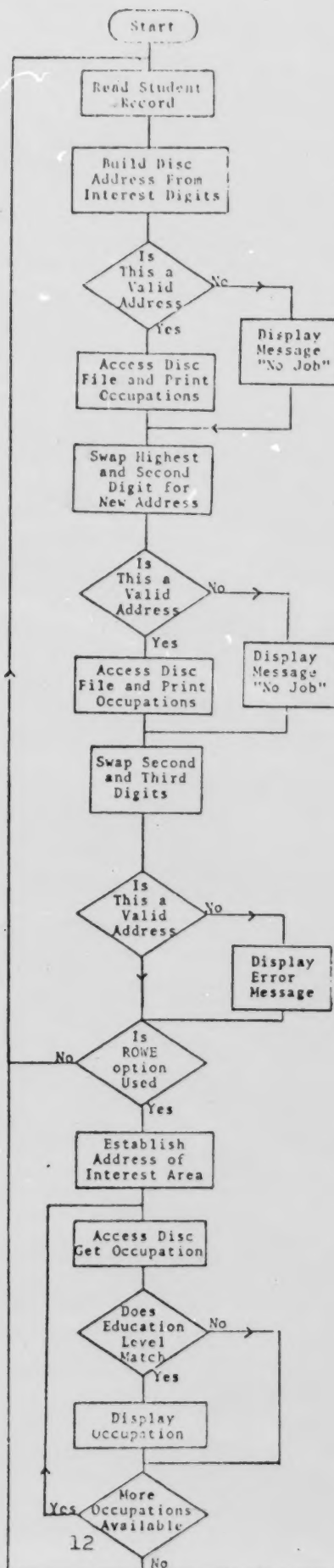
<u>Location</u>	<u>No. Char.</u>	<u>Description</u>	<u>Data Type</u>
1-5	5	Student ID	Numeric
6-13	8	Last Name	Alpha
14-17	4	First Name	Alpha
18-19	2 (1)	First Choice	Numeric
20-21	2 (1)	Second Choice	Numeric
22-23	2 (1)	Third Choice	Numeric
24-223	4	Matrix Output	Numeric

<u>Location</u>	<u>No. Char.</u>	<u>Description</u>	<u>Data Type</u>
1-3	3	Job Code Title	Alpha
4-6	3	Blank	
7-9	3	Job Code Title	Numeric
		equivalent	Numeric
10-11	2	Blank	
12-13	2	No. Occupation in Category	Numeric

PROGRAM 111

Student Printer
Profile

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PROGRAM III

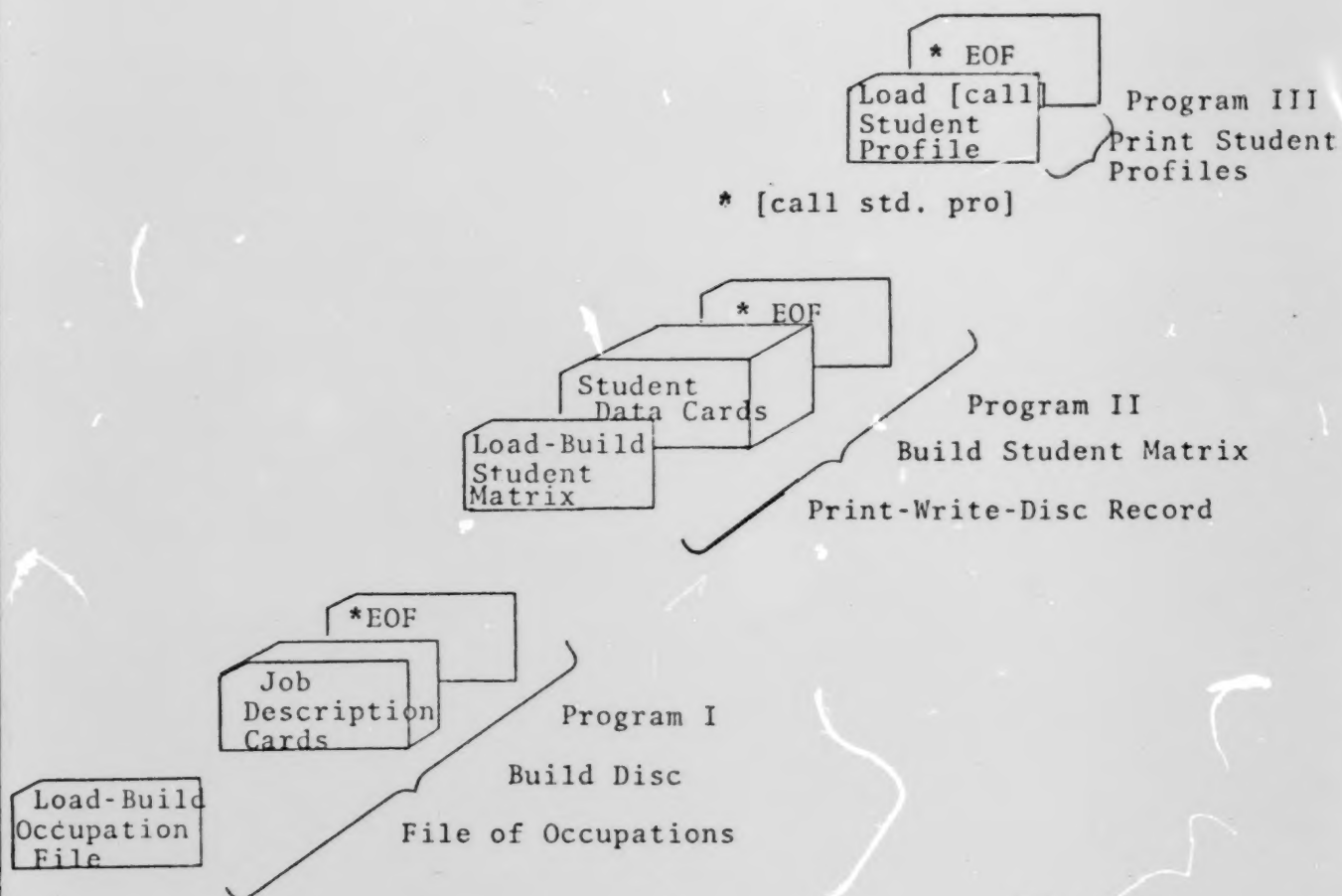
The disc record established in Program II is the input for this program. Once this data is read, it builds a search key. This key is a three digit number corresponding to the three highest interest areas established in Program II. The highest interest area is the hundreds position, the second highest is the tens position and the third highest is the units position.

This program contains a data statement which lists the valid interest area combination(Job) and the corresponding number of occupations within the combination (NJOB). The program then builds an address for the first job in each area. Once the interest areas are combined to create a 3 digit number, a search is begun to determine if this number is valid, i.e. is there a job list for this combination. If a match is found, the corresponding disc address is then placed in the key and the disc record is then obtained. Since the number of jobs is known for each valid job classification, sequenced records are read and listed under that classification. After all the jobs under that classification are listed and/or if it turns out that that number is not valid, the order of the interest areas are changed, i.e. the highest level is changed with the second level and the search begins again.

A third exchange occurs by swapping the third digit with the second.

If the user elected to respond on the ROWE classification, interest and education level, the records are again scanned and the matched occupations are listed.

DECK SETUP FOR PROCESSING



- * The current version of Program II has a call statement (INVOKE) which automatically causes execution of Program III. Therefore Programs II and III are a single job.

// D1 , UNITNO-20
 // PRINT DEVICE-1403
 // READ DEVICE-1442

*PROCESS SOURCE, LINK 1, LIB R1 , MAP
 1 PROGRAM HLDUCC
 2 DIMENSION T 10 , C 10 , R 20
 3 DEFINE FILE 20 999,050,E,IAUD
 4 100 FORMAT 17,20A4
 5 101 FORMAT 17,13,20A4
 6 102 FORMAT 20A4
 7 DO 10 IX 1,999
 8 IADD IX
 9 READ 9,102,END 22 R I ,1 1,20
 10 WRITE 3,101 IX, R I ,1 1,20
 11 WRITE 20,IX,100 IX, R I ,1 1,10
 12 10 CONTINUE
 13 22 CONTINUE
 14 STOP
 15 END

NAME	AT HEX1 DEC1	HEX2 DEC2	NAME	AT HEX1 DEC1	HEX2 DEC2	NAME	AT HEX1 DEC1	HEX2 DEC2
T	R U0403 01027	042A C1066 C	R	U042B 01067	0452 01106 R	R	0453 01107	04A2 01186
IADD	I 0443 C1187	IX	I	04A7 01191	I	I	04AB 01195	

ERRORS FOR THIS COMPILATION

STATEMENT
NUMBER

ERROR
ISN NUMBER SEVERITY EXPLANATION

4 UNDEF VAR NAME, INDICATED BY A DUB IN MAP

001 TOTAL ERRORS FOR THIS COMPILATION
 4 WAS THE HIGHEST SEVERITY

-- STATEMENT ALLOCATIONS
 102 05A6 101 05AF 100 05BD 10 0679 22 067C

```
// INT DEVICE-1403
// READ DEVICE-1442
// DAD44 UNITNO-21
// DAD44 UNITNO-20
*PROCESS SOURCE, LINK T, LIB R1 ,MAP
1 PROGRAM STCPRO
2 DIMENSION JUP HO ,AJOR 80 ,JCRAD 80
3 DIMENSION MX2 7,7 ,ROW 6 ,COL 7 ,R 20 ,A 20 ,ROWE 8 ,EDLVL 5
4 DATA ROW/DACTID,DCOMPID,DUCCID,DSLFIID,DSLFI2D,DTOTAD/
5 DATA COL/PREALD,DINVEN,DARTID,DSCCID,DENTERD,DCONVED,DTOTAD/
6 DATA ROWE/DAFCRD,DCUTID,USERVID,DEDUCH,DRUSCH,DETECH,DSCIED,DRUSCH/
7 DATA EDLVL/DOROPD,DM.S.D,DETECH,DCOLLID,DRADID/
8 DATA NJUR/C2,20,35,23,02,19,04,04,02,04,07,7,17,5,2,5,3,6,4,4,1,
  X4,5,12,13,
  X
  X 10,6,6,5,13,1,5,12,3,6,3,11,1,8,1,8,5,7,3,6,4,8,2,9,3,1,1,
  X1,1,1,26,2,13,6,5,2,2,9,4,3,6,2,2,4,2,2,4,40,22,77,34,62,148,58,
  X83/
9 DATA JOB/123,124,125,126,132,145,146,147,156,152,154,162,164,165,
  X234,231,246,241,243,254,256,261,213,214,215,216,345,342,354,324,
  X325,321,456,451,452,453,465,412,415,416,423,425,426,421,435,436,
  X432,562,564,512,514,516,524,534,531,546,541,542,543,612,614,615,
  X624,625,621,645,641,642,643,651,652,654,600,680,740,700,730,720,
  X670,710/
10 OFFINE FILE 21 100,225,E,IADD
11 DEFINE FILE 20 999,050,E,IS
12 110 FORMAT I3,A3,F7.3,I1,17A4,A1
13 111 FORMAT I5,2A4,A4,3I2,50I4,2I1
14 112 FORMAT DDD,15,2X,2A4,1X,A4,3I2/21I4/21I4/21I4
15 113 FORMAT D FIRST CHOICE D,I3,1X,A4,D SECOND CHOICE D,I3,1X,A4,
  X D THIRD CHOICE D,I3,1X,A4,D INT-D,I2,D ED LVL-D,I3
16 114 FORMAT D JCJ CODE D,I4,D HAS D,I4,D JOR TITLES D
17 115 FORMAT D JCJ CODE D,I4,D HAS NO JOB TITLES D
18 116 FORMAT D NEW JOB CODE D,I4
19 117 FORMAT D D,I3,2X,A3,2X,F7.3,2X,I1,2X,18A4
20 118 FORMAT D NO JOB TITLES EXIST FOR TRAITS SELECTED D
21 146 FORMAT 6X,I4,1X,I3
22 147 FORMAT D D9I5
23 150 FORMAT D1 COMPUTER ASSISTED OCCUPATION SEARCH D
24 151 FORMAT I3,20A4
25 152 FORMAT D INTEREST AREA-D,I2,2X,A4,D EDUCATION LEVEL-D,I2,2X,A4
26 153 FORMAT D NO JOB TITLES FOR THE SPECIFIED INTEREST AND EDUCATION
  X LEVEL INDICATED D
27 154 FORMAT D D, 50 D+-D
28 IS 1
29 READ 21 D IS,151 AST, A J ,J 1,20
C CALCULATE JOB ADDRESS
30 JCBAO 1 1
31 DO 721 2,80
32 J 1- 1
33 J1 JCBAO J
34 J2 NJUR J
35 JCBAO I J1 + J2
36 WRITE 3,146 JCBAO I ,NJUR I
37 72 CONTINUE
38 NST NST + 1
39 DO 10 IS 2,NST
40 WRITE 3,150
```

```

41      READ 21015,111 ID,L1,L2,F1,IFST,ISEC,ITRD,
      X MX2 J,K ,K 1,7 ,J 1,6 ,INT,IEDL
42      JPRT  C
43      WRITE 3,112 ID,L1,L2,F1
      C      X      ID,L1,L2,F1,IFST,ISEC,ITRD, MX2 J,K ,K 1,7 ,J 1,6
44      WRITE 3,113 IFST,COL IFST ,ISEC,COL ISEC ,ITRD,COL ITRD ,INT,IEDL
45      ICCODE IFST*100+ISEC*10+ITRD
46      IPAS 0
47      15  DO 12 IP 1,72
48          IF ICCODE.EQ. JOR IP  GO TO 13
49          GO TO 12
50      13  WRITE 3,114 ICCODE,NJOR IP
51          GO TO 14
52      12  CONTINUE
53          IPAS IPAS+1
54          WRITE 3,115 ICCODE
55      32  GO TO 16,17,18,19,20,31 ,IPAS
      C      COMPUTE NEW CODE
56      16  ICCODE IFST*100+ITRD*10+ISEC
57      21  WRITE 3,116 ICCODE
58          GO TO 15
59      17  ICCODE ISEC*100+IFST*10+ITRD
60          GO TO 21
61      18  ICCODE ISEC*100+ITRD*10+IFST
62          GO TO 21
63      19  ICCODE ITRD*100+IFST*10+ISEC
64          GO TO 21
65      20  ICCODE ITRD*100+ISEC*10+IFST
66          GO TO 21
67      31  WRITE 3,118
68          GO TO 42
69      14  CONTINUE
70          IDX NJOR IP
71          DO 30 I 1,IDX
72          IADD JOBAD IP +I-1
73          READ 200IADD,110 IX,RIA,DOT,JED, R J ,J 1, 8
74          WRITE 3,117 IX,RIA,DOT,JED, R J ,J 1, 8
75      30  CONTINUE
76          IPAS IPAS+1
77          IF IPAS.EQ.3 GO TO 42
78          GO TO 32
79      42  IF INT.EQ.C GO TO 10
80          WRITE 3,154
81          WRITE 3,152 INT,RCWE INT ,IEDL,EDLVL IEDL
82          INT2 INT + 72
83          KEY JOBAD INT2
84          IDX NJOR INT2
85          DO 40 I 1,IDX
86          IADD KEY+I-1
87          READ 200IADD,110 IX,RIA,DOT,JED, R J ,J 1, 8
88          IF JED.EQ.6 JED JED-1
89          IF JED.EQ. IEDL GO TO 41
90          GO TO 40
91      41  WRITE 3,117 IX,RIA,DOT,JED, R J ,J 1, 8
92          JPRT 1
93      40  CONTINUE
94          IF JPRT .EQ. 1 GO TO 10

```

95 WRITE 3.153
 96 10 CONTINUE
 97 STOP
 98 END

NAME	AT	HEX1	DEC1	HEX2	DEC2	NAME	AT	HEX1	DEC1	HEX2	DEC2	NAME	AT	HEX1	DEC1	HEX2	DEC2
ROW	R	0675	01653	068C	01676	CCL	R	068D	01677	06A8	01704	ROWE	R	06A9	01705	06C8	01736
EDLVL	R	06C9	01737	06DC	01756	NJOR	I	06DD	01757	081C	02076	JOB	I	081D	02077	095C	02396
JORAD	I	095D	02397	0A9C	02716	MX2	I	0A9D	02717	0860	02912	R	R	0861	02913	088C	02992
A	R	0881	02993	0CCC	03072	IADD	I	0C01	03073			IS	I	0C05	03077		
NST	I	0C09	03081			J	I	0C0D	03095			I	I	0C11	03089		
J1	I	0C15	03093			J2	I	0C19	03097			ID	I	0C1D	03101		
L1	I	0C21	03105			L2	I	0C25	03109			F1	R	0C29	03113		
IFST	I	0C2D	03117			ISFC	I	0C31	03121			ITRD	I	0C35	03125		
K	I	0C39	03129			INT	I	0C3D	03133			IEDL	I	0C41	03137		
JPRT	I	0C45	03141			ICODE	I	0C49	03145			IPAS	I	0C4D	03149		
IP	I	0C51	03153			IDX	I	0C55	03157			IX	I	0C59	03161		
RIA	R	0C5D	03165			CCT	R	0C61	03169			JED	I	0C65	03173		
INT2	I	0C69	03177			KEY	I	0C6D	03181								

ERRORS FOR THIS COMPILATION

STATEMENT NUMBER	ISN	ERROR NUMBER	SEVERITY	EXPLANATION
147		97	4	STATEMENT NUMBER IS UNREFERENCED
	C15	55	4	MISSING FORMAT DELIMITER
	C22	55	4	MISSING FORMAT DELIMITER

C03 TOTAL ERRORS FOR THIS COMPILATION
 4 WAS THE HIGHEST SEVLRTY

STATEMENT ALLOCATIONS

STATEMENT	HEX1	DEC1	HEX2	DEC2	STATEMENT	HEX1	DEC1	HEX2	DEC2	STATEMENT	HEX1	DEC1	HEX2	DEC2
154	0EDF	153	CF38	152	0F60	151	0F78	150	0FA7	147	0F80	146	0F8C	118
117	OFF9	116	1024	115	104A	114	1071	113	108C	112	10EB	111	1112	110
72	11F6	15	12F7	13	1320	12	1338	32	1350	16	1353	21	1368	17
18	1395	19	13BC	20	13CB	31	13E6	14	13F2	30	1495	42	1480	41
40	15C5	10	15CD											

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1 PROGRAM RLDNFX
2 DIMENSION K 6
3 DIMENSION MX 7,7 ,A 20 ,MX2 7,7 ,NI 5 ,CCL 7 ,ROW 6
4 DATA CCL/0,FALD,0,INVC0,0,ARTI0,0,SOCIO,0,ENTED,0,CONVE,0,TOTA0/
5 DATA ROW/0,ACTI0,0,CCEP0,0,UCC00,0,SLF10,0,SLF20,0,TOTA0/
6 DEFINE FILE 21 I00,225,E,IS
7   100 FORMAT 2CA4
8   101 FORMAT      15,A4,A4,A4,I12,1411
9   102 FORMAT    D 0,615
10  103 FORMAT  HGRAB MATRIX#
11  104 FORMAT  6X,/ A4,4X
12  105 FORMAT    D 0,A4,7 15,4X
13  106 FORMAT  DOCONVENTIC MATRIX#
14  107 FORMAT    D THE HIGHEST VALUE IS D,1A4,D VALUE D,15
15  108 FORMAT    D THE SECCND VALUE IS D,1A4,D VALUE D,15
16  109 FORMAT    D THE THIRC VALUE IS D,1A4,D VALUE D,15
17  110 FORMAT    D 0,15,2A4,A4,3I2/2114/2114/2114
18  111 FORMAT  15,2A4,A4,3I2,5O14,211
19  112 FORMAT  #I#,2CA4
20  113 FORMAT    D 0,15,1X,2A4,1X,A4,3I3,2X,4X,13I6/ D INT=D,13,D ED=D,14
21  114 FORMAT    D 0,0ID0,5X,0LAST0,3X,0FIRST0,2X,0HI MD L00,5X,
    X 6 1X,A4,1X ,7 1X,A4,1X -, 213
22  115 FORMAT I3,20A4
C
23 READ HEADER
24 READ 9,100 ,A I ,I 1,20
25 NI 1 11
26 NI 2 11
27 NI 3 14
28 NI 4 5
29 NI 5 5
30 DO 10 IS 2,999
31 WRITE 3,112 A I ,I 1,20
C
32 READ 9,101,END 11 ID,L1,L2,F1, MX J,K ,K 1,6 ,J 1,5 ,INT,IEDL
33 COMPUTE PERCENTAGES AND TOTAL BY ROW
34 DO 12 J 1,5
35 MT 0
36 MT2 0
37 DO 13 K 1,6
38 MX2 J,K MX J,K *100 /NI J
39 MT MX J,K +MT
40 MT2 MX2 J,K +MT2
41 CONTINUE
42 13
43 MX J,7 MT
44 MX2 J,7 MT2
45 CONTINUE
46 12
47 TOTAL BY CCOLUMN
48 DO 14 K 1,7
49 MT 0
50 MT2 0
51 DO 15 J 1,5
52 MT MX J,K +MT
53 MT2 MX2 J,K +MT2
54 CONTINUE
55 15

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50      MX A,K MT
51      MX2 6,K MT2
52      14  CONTINUE
53      WRITE 3,103
54      WRITE 3,104 COL I ,I 1,7
55      C    WRITE RAW MATRIX
56      DO 16 J 1,6
57      WRITE 3,105 ROW J , MX J,K ,K 1,7
58      16  CONTINUE
59      C    WRITE CONVERTED MATRIX
60      WRITE 3,106
61      WRITE 3,104 COL I ,I 1,7
62      DO 17 J 1,6
63      WRITE 3,105 ROW J , MX2 J,K ,K 1,7
64      17  CONTINUE
65      C    DETERMINE H1, SEC. THIRD SCORES
66      DO 18 K 1,6
67      WK MX2 6,K
68      18  CONTINUE
69      C    DETERMINE HIGHEST VALUE
70      IFST 1
71      DO 20 I 1,6
72      IF W IFST .LT. W I+1 GO TO 23
73      GO TO 20
74      23  IFST I+1
75      20  CONTINUE
76      W IFST 0.0
77      WRITE 3,107 CCL IFST ,MX2 6,IFST
78      C    DETERMINE 2ND VALUE
79      ISEC 1
80      DO 21 I 1,6
81      IF W ISEC .LT. W I+1 GO TO 22
82      GO TO 21
83      22  ISEC I+1
84      21  CONTINUE
85      W ISEC 0.0
86      WRITE 3,108 CCL ISEC ,MX2 6,ISEC
87      C    DETERMINE 3RD VALUE
88      ITRD 1
89      DO 24 I 1,6
90      IF W ITRD .LT. W I+1 GO TO 25
91      GO TO 24
92      25  ITRD I+1
93      24  CONTINUE
94      W ITRD 0.0
95      WRITE 3,109 CCL ITRD ,MX2 6,ITRD
96      C    WRITE SUMMARY DATA TO DISC AND PRINTER
97      WRITE 3,114 ROW I ,I 1,6 , COL I ,I 1,7
98      WRITE 3,113 IC,L1,L2,F1,IFST,ISEC,ITRD, MX2 J,7 ,J 1,6 ,
99      X MX2 6,K ,K 1,7 ,INT,IECL
100     WRITE 2,115,111
101     X ID,L1,L2,F1,IFST,ISEC,ITRD, MX2 J,K ,K 1,7 ,J 1,6
102     X,INT,IECL
103     10  CONTINUE
104     11  CONTINUE
105     IS 15-2
106     IS 1

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      WRITE 21DIS,115  IB, A I, I 1,20
C
C  CALL PROGRAM TO PRINT STUDENT PROFILE
C
98    50  INVOKE STDPRC
C
99    51  STOP
100   END

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NAME	AT	HEX1	DEC1	HEX2	DEC2	NAME	AT	HEX1	DEC1	HEX2	DEC2	NAME	AT	HEX1	DEC1	HEX2	DEC2
COL	R	045F	01119	047A	01146	ROW	R	047B	01147	0492	01170	W	R	0493	01171	04AA	01194
MX	I	04AB	01195	056E	01390	A	R	05AF	01391	05BE	01470	MX2	I	05BF	01471	0682	01666
NI	I	0683	01667	0696	01686	IS	I	0697	01687			I	I	069B	01691		
ID	I	069F	01695			LI	I	06A3	01699			L2	I	06A7	01703		
FI	R	06AB	01707			K	I	06AF	01711			J	I	06B3	01715		
INT	I	06B7	01719			IEDL	I	06BF	01723			MT	I	06BF	01727		
MT2	I	06C3	01731			IFST	I	06C7	01735			ISEC	I	06CB	01739		
ITRD	I	06CF	01743			ID	I	06D3	01747								

ERRORS FOR THIS COMPILATION.

STATEMENT NUMBER	ISN	ERROR NUMBER	SEVERITY	EXPLANATION
102		97	4	STATEMENT NUMBER IS UNREFERENCED
110		97	4	STATEMENT NUMBER IS UNREFERENCED
50		97	4	STATEMENT NUMBER IS UNREFERENCED
51		97	4	STATEMENT NUMBER IS UNREFERENCED

004 TOTAL ERRORS FOR THIS COMPILATION
4 WAS THE HIGHEST SEVERITY

STATEMENT ALLOCATIONS

115	09H5	114	09D3	113	0A13	112	0A41	111	0A4D	110	0A66	109	CAA4	108	0AD2
107	0B01	106	0B24	105	0B2D	104	0B3E	103	0B56	102	0B5F	101	0B6B	100	0B7F
13	0C03	12	0D1E	15	0D79	14	0D94	16	0E12	17	0E90	18	0E8E	23	0EF9
20	0F02	22	0F6D	21	0F76	25	0FE1	24	0FEA	10	112B	11	112E	5C	116C
51	1172														

3R15015FORESTER	003
4R15016INDUSTRIAL ARTS TEACHER	004
5R15003.1R75RADIO OPERATOR	005
6R15020.2R14ELECTRICIAN	006
7R15521.1304MILLER/FLEEMAN	007
8R15700.2R14JEWELER	008
9R15950.7R24POWER PLANT OPERATOR	009
10R15631.2R14POWERHOUSE REPAIRMAN	010
11R15045SKILLED TRADESMAN*	011
12R15601.2R04TOOL AND DIE MAKER	012
13R15638.2R14GLAZIER	013
14R15683.2R04LOOM FIXER	014
15R15526.7R13BAKER	015
16R15315.3R13COOK	016
17R15915.4R73FILLING STATION ATTENDANT	017
18R15504.7R23HEAT TREATER	018
19R15713.3R12OPTICIAN	019
20R15912.8R43WELDER	020
21R15614.7R23WIRE DRAWER	021
22R15651.8R52OFFSET PRESS OPERATOR	022
23R15007.0R16AUTOMOTIVE ENGINEER	023
24R15007.0R16MECHANICAL ENGINEER	024
25R15010.0R15ENGINEER, MINING	025
26R15005.0R15CIVIL ENGINEER	026
27R15012.2R05INDUSTRIAL ENGINEER TECHNICIAN	027
28R15007.1R15MECHANICAL ENGINEER TECHNICIAN	028
29R15621.2R14AIRCRAFT MECHANIC	029
30R15193.16R4AIR TRAFFIC CONTROLLER	030
31R15620.2R14AUTOMOBILE MECHANIC	031
32R15715.2R14WATCH REPAIRMAN	032
33R15005.2R14BOILERMAKER	033
34R15017.2R14DRAFTSMAN	034
35R15500.3R04ELECTROPLATER	035
36R15620.1314GARAGE FOREMAN	036
37R15421.1R14FARMER RANCHER	037
38R15922.3R14LINEMAN TLL. & TEL.	038
39R15683.3R04LOOM CHANGER	039
40R15600.2R04MACHINE REPAIRMAN	040
41R15600.2R04MACHINIST	041
42R15899.2R14MAINTENANCE MAN	042
43R15638.2R14MILWRIGHT	043
44R15823.2R14MECHANIC, RADIO	044
45R15600.2R04MECHANIC*	045
46R15862.3R14PLUMBER	046
47R15407.3R13AUTOMOBILE BODY REPAIRMAN	047
48R15804.2R14SHEET METAL MAN	047
49R15953.7R23COMPRESSOR HOUSE OPERATOR	049
50R15704.8R43ENGRAVER, MACHINE	050
51R15611.7R23FORGING PRESS OPERATOR	051
52R15859.8R33HEAVY EQUIPMENT OPERATOR	052
53R15866.3R13ROOFER	053
54R15806.8R74UPHOLSTERER	054
55R15940.8R42LOGGERS	055
56R15022MACHINE OPERATOR*	056
57R15223.3R72TOOL CRIB ATTENDANT	057
58R15952.3R74LOAD CHECKER	058
59R15771.2R14STONE CUTTER	059
60R15604.3R04TURRET LATHE OPERATOR	060
61R15829.2R14ELEVATOR MECHANIC	061
62R15709.2R14LOCKSMITH	062
63R15015.3R04NUCLEAR REACTOR TECHNICIAN	063
64R15406.16R4NURSEPMAN	064
65R15409.1R14TREE SURGEON	065

67RIC022.2814SWITCHMAN TEL. & TEL.	607
68RI 1.8843ASSIMPLER	608
69R 1.7823MILL PRESS OPERATOR	609
70R 1.7823OPY CLEANER	670
71RIC603.7823GRINDER	671
72RIC604.7823INSPECTOR	672
73RIC613.7823COLLER	673
74RIC651.7823PRINTER	674
75RIC222.3873SHIPPING/RECEIVING CLERK	675
76RIC401.7813STRUCTURAL STEEL WORKER	676
77RIC750.8843TIRE BUILDER	677
78RIC365.3413SHOE REPAIRMAN	678
79RIC919.8832TEAMSTER	679
80RIC407.8842GROUNDS KEEPER	680
81RA1973.3814COMPOSITOR TYPESETTER	681
82RA1477.8844BOOKBINDER	682
83RSE610.3814BLACKSMITH	683
84RSE910.3834FIREMAN, LOCOMOTIVE	684
85RSLP62.3814GAS MAIN-FITTER	685
86RSE518.3814MOLDER FOUNDRY	686
87RSE462.3814PIPEMAN	687
88RSE198.1684RAILROAD CONDUCTOR	688
89RSE330.3713BARNER	689
90RSE316.8843BUTCHER	690
91RSE375.2683POLICEMAN PATROLMAN	691
92RSE376.8683DETECTIVE	692
93RSE922.8833CCAL EQUIPMENT OPERATOR	693
94RSE373.8843FIREMAN FIRE FIGHTER	694
95RSE913.3633MOTORMAN STREETCAR	695
96RSE913.4633TAXICAB DRIVER	696
97RSE913.8833CHAUFFEUR	697
98RSE311.8783WAITRESS WAITER	698
99RSE319.8782FOUNTAIN MAN	699
100RSE 2LABORER, GUARD, JANITOR, WATCHMAN, WAREHOUSE	100
101RSE915.8782PARKING LOT ATTENDANT	101
102RSE240.3683MILL COLLECTOR	102
103RSC388.8682ELEVATOR OPERATOR	103
104RSC429.8872STOCKMAN	104
105RSC318.8871KITCHEN HELPER	105
106RS1091.2785VOCATIONAL AGRICULTURE TEACHER	106
107RS1637.2814GASAPPLIANCE SERVICEMAN	107
108RS1683.7823WEAVER	108
109RS1685.8852KNITTER	109
110REC302.8872LAUNDRESS	110
111REC323.8872MAID	111
112RE1637.2814AIR CONDITIONING ENGINEER MECHANIC	112
113RE1530.1324FOREMAN	113
114RE1157.1334SHIPPILOT	114
115 E1869.8872PACKMAN	115
116RES379.1685FISH AND GAME WARDEN	116
117RES910.3834RAILROAD ENGINEER	117
118RES413.1814CATTLE RANCHER	118
119RES920.8843CRATER AND PACKER	119
120RES910.8843RAILROAD BRAKEMAN	120
121RFS223.3871STOCK CLERK	121
122RES431.8842FISHERMAN	122
123RC1081.1885SURVEYOR	123
124RC1710.2814INSTRUMENT MECHANIC	124
125RC1960.3824MOTION PICTURE PROJECTIONIST	125
126RC1633.2814TYPEWRITER REPAIRMAN	126
127RC1860.3814CARPENTER	127
128RC1840.7813PAINTER HOUSE, BUILDING, EQUIPMENT	128
129RC1018.5873RODMAN	129
130RCS822.2814INSTALLER RLPARMAN	130
131RCS785.2614TAILOR	131

133RC 1.7813 TILE SETTER
 134RC .2813 PLASTER
 135RCS .3413 BRICK LAYER
 136RCS .4633 BUS DRIVER
 137RCS44.4843 ELEMENT MASON
 138RCS785.1613 PIPE MAKER
 139RCS558.1823 FURNACE MAN
 140RCS233.3883 MAIL CARRIER
 141RCS239.5883 MEAL CLADER
 142RCS450.7813 MINER
 143RCS911.8873 SAILOR SEAMAN
 144RCS842.7813 PLASTERER
 145RCS922.4812 INDUSTRIAL TRUCK OPERATOR
 146RCS682.4852 SPINNER
 147RCE921.8813 CRANE MAN
 148RCS589.6873 GRADER
 149RCE905.8833 TRUCK DRIVER
 150RCE929.8833 TRACTOR OPERATOR
 151RCE922.8812 FORK LIFT OPERATOR
 152IAS050.0886 ECONOMIST
 153IAS070.1086 INTERNIST PHYSICIAN
 154IAR055.0886 ANTHROPOLOGIST
 155IAR021.0886 ASTRONOMER
 156IAR070.1086 PATHOLOGIST
 157IAR023.0816 PHYSICIST
 158IAR022.0816 CHEMIST
 159ISC012.1885 PRODUCTION PLANNER
 160ISC078.3814 MEDICAL-LABORATORY ASSISTANT
 161ISC720.2814 REPAIRMAN, TV
 162ISR041.0816 HISTOLOGIST
 163ISR071.1086 OSTEOPATH
 164ISR079.1086 CHIROPRACTIC
 165ISR091.2285 MATHEMATICS TEACHER
 166ISR091.2285 NATURAL SCIENCE TEACHER
 167ISR079.1085 OPTOMETRIST
 168ISAC70.1086 PHYSICIAN*
 169ISAC70.1086 PSYCHIATRIST
 170ISAO45.0886 PSYCHOLOGIST
 171ISAC78.3815 MEDICAL TECHNOLOGIST
 172IES041.0816 BACTERIOLOGIST
 173IES041.0816 PHYSIOLOGIST
 174IES074.1815 PHARMACIST
 175IES011.2814 RESEARCH ANALYST
 176IEC020.1885 ACTUARY
 177ICR019.2815 QUALITY CONTROL TECHNICIAN
 178ICR213.3824 COMPUTER OPERATOR
 179ICR620.2814 EQUIPMENT REPAIRMAN
 180ICR159.3844 RESEARCH ASSISTANT
 181IRAO24.0816 GEOLOGIST
 182IRAO20.0886 MATHEMATICIAN, STATISTICIAN
 183IRSC70.1086 SURGEON
 184IRAO25.0885 METEOROLOGIST
 185IRAO25.2885 WEATHER OBSERVER
 186IRSO40.0816 AGRONOMIST
 187IRSC40.0816 ANIMAL SCIENTIST
 188IRSO41.0816 BOTANIST
 189IRSC40.0816 HORTICULTURIST
 190IRSO23.0816 NATURAL SCIENTIST*
 191IRSC24.0816 CEANOGRAPHER
 192IRSO41.0816 ZOOLOGIST
 193IRSO41.0816 BIOCHEMIST
 194IRSC07.1815 ENGINEER AIDE
 195IRSC73.1085 VETERINARIAN
 196IRSO29.0885 GEOGRAPHER
 197IRSO78.3684 X-RAY TECHNICIAN

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199IRECC2.1	AERONAUTICAL ENGINEER	199
200IRECC08.1	CHEMICAL ENGINEER	200
201IRE072.1	DENTIST	201
202IRECC3.1	ELECTRICAL ENGINEER	202
203IRE011.081	METALLURGICAL ENGINEER	203
204IRECC2.081	TEST ENGINEER, AIRCRAFT	204
205IRECC7.081	ENGINEER*	205
206IRE022.281	CHEMICAL LABORATORY TECHNICIAN	206
207IRECC3.081	RADIO OR TELEVISION ENGINEER	207
208IRE	AEROSPACE ENGINEERING TECHNICIAN	208
209IRE729.381	ELECTRONIC TECHNICIAN	209
210IRE011.281	METALLURGIST, ASSISTANT	210
211IRC196.188	AIRPLANE NAVIGATOR	211
212IRC020.188	COMPUTER PROGRAMMER	212
213IRCC07.081	TOOL DESIGNER	213
214IRC149.281	MODEL MAKER	214
215IRC196.281	AIRPLANE PILOT	215
216IRCC07.181	ENGINEERING TECHNICIAN*	216
217IRC710.281	INSTRUMENT REPAIRMAN	217
218IRC029.381	LABORATORY TECHNICIAN	218
219IRC729.381	TESTER, ELECTRONIC SYSTEMS	219
220IRC601.280	TOOL MAKER	220
221ASE150.028	DRAMA COACH	221
222ASE091.228	ENGLISH TEACHER	222
223ASE132.268	JOURNALIST-REPORTER	223
224ASE150.028	DRAMA TEACHER	224
225ASE151.028	DANCING TEACHER	225
226ASE137.268	FOREIGN LANGUAGE INTERPRETER	226
227AST090.228	PHILOSOPHER	227
228AST149.028	ART TEACHER	228
229AST091.228	LITERATURE TEACHER	229
230AST152.028	MUSIC TEACHER	230
231AST152.048	MUSICIAN	231
232AST152.048	ORCHESTRA LEADER	232
233AES164.068	ADVERTISING MAN	233
234AES164.118	ADVERTISING MANAGER	234
235AES159.048	ENTERTAINER, DANCER, SINGER	235
236AES165.068	PUBLIC RELATIONS MAN	236
237AES257.868	FASHION MODEL	237
238AIS130.088	WRITER	238
239AIS132.038	EDITOR	239
240AIS130.088	RADIO PROGRAM WRITER	240
241AIS131.088	DRAMATIST	241
242AIS150.048	ACTOR-ACTRESS	242
243AIS142.081	DESIGNER	243
244AIS142.051	INTERIOR DECORATOR	244
245AIS132.088	CRITIC REVIEWER	245
246AIS141.081	FASHION ILLUSTRATOR	246
247AIS142.081	FURNITURE DESIGNER	247
248AIS142.081	JEWELRY DESIGNER	248
249AIS142.081	FURRIER	249
250AIS142.091	WOMEN'S GARMENT DESIGNER	250
251AIE298.381	DECORATOR	251
252AIROC1.081	ARCHITECT	252
253AIR144.081	ARTIST	253
254AIR143.062	PHOTOGRAPHER	254
255AIR972.382	PHOTOLITHOGRAPHER	255
256AIR970.281	PHOTOGRAPH RETOUCHER	256
257SEC195.113	DIRECTOR SOCIAL SERVICE	257
258SEC169.118	COMPENSATION ADVISOR	258
259SEC045.108	CRM DIRECTOR	259
260SEC166.268	EMPLOYMENT REPRESENTATIVE	260
261SEC187.168	FUNERAL DIRECTOR	261
262SEC166.268	INTERVIEWER	262
263SEC166.088	JOB ANALYST	263

265SE	6.1684EMPLOYEE BENEFITS APPROVER	265
266SE	9.1384FOOD SERVICE MANAGER	266
267S	12.8783BARTENDER	267
268E	10.8683HOSTESS HOTEL, TEA ROOM, ETC.	268
269SER241.1685CLAIM ADJUSTER		269
270SER221.1685PRODUCTION EXPEDITER		270
271SER166.1684HEALTH & WELFARE COORDINATOR		271
272SE1090.1186EDUCATIONAL ADMINISTRATOR		272
273SE1166.1186TRAINING DIRECTOR		273
274SE1079.1185ENVIRONMENTAL HEALTH ENGINEER		274
275SE1052.0885HISTORIAN		275
276SE1091.2285HISTORY TEACHER		276
277SE1278.2585HOME SERVICE REPRESENTATIVE		277
278SEA	6COMMUNITY RECREATION ADMINISTRATOR	278
279SEA045.1085COUNSELOR*		279
280SEA148.1185FOREIGN SERVICE OFFICER		280
281SCE187.1186RECREATION DIRECTOR		281
282SCE187.1185BUSINESS AGENT, LABOR UNION		282
283SCE187.1685EXECUTIVE HOUSEKEEPER		283
284SCE167.1185PUBLIC HEALTH SERVICE OFFICER		284
285SCE187.1685THEATRE MANAGER		285
286SCE187.1684CATERER		286
287SCE187.1684LIQUOR STORE MANAGER		287
288SCE187.1684RESTAURANT PROPRIETOR		288
289SCE204.2884ORDER SERVICE CORRESPONDENT		289
290SCE919.3684TICKET AGENT		290
291SCE358.8783BAGGAGEMAN MOTOR TRANSPORTATION		291
292SRI056.1285EXTENSION AGENT		292
293SRE059.2285ATHLETIC COACH		293
294SRE153.2285PHYSICAL EDUCATION TEACHER		294
295SRE187.1685BUILDING SUPERINTENDENT		295
296SRE321.1384HOUSEKEEPER		296
297SRE079.1284OCCUPATIONAL THERAPIST		297
298SRE059.2284GOVERNNESS		298
299SRE153.3483ATHLETE		299
300SRE359.8783HOUSEPARENT		300
301SRC359.8783WARD ATTENDANT		301
302SIA050.2286COLLEGE PROFESSOR		302
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304SIA	6SOCIAL SCIENTIST*	304
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 5300 5.1713000K
 5313 5.2683000K POLICEMAN PATROLMAN
 5325 5.4693000K DETECTIVE
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 5345 5.9133000K MOTORCYCLE STREETCAR
 5355 5.9133000K TAXICAB DRIVER
 5365 5.9133000K CHAUFFEUR
 5375 5.9133000K WAITRESS WAITER
 5385 5.9133000K BILL COLLECTOR
 5395 5.9133000K BUS DRIVER
 5405 5.9133000K MAIL CARRIER
 5415 5.9133000K BARTENDER
 5425 5.9133000K MOTOR TRANSPORTATION
 5435 5.9133000K HOUSEPARENT
 5445 5.9133000K ATTENDANT
 5455 5.9133000K AIRLINE STEWARDESS
 5465 5.9133000K AIR TRAFFIC CONTROLLER
 5475 5.9133000K LOCKSMITH
 5485 5.9133000K RAILROAD CONDUCTOR
 5495 5.9133000K MEDICAL-LABORATORY ASSISTANT
 5505 5.9133000K CATERER
 5515 5.9133000K HOUSEKEEPER
 5525 5.9133000K OCCUPATIONAL THERAPIST
 5535 5.9133000K PHYSICAL THERAPIST
 5545 5.9133000K COSMETOLOGIST
 5555 5.9133000K HAIR STYLIST
 5565 5.9133000K POSTMASTER
 5575 5.9133000K CUSTOMER SERVICES MANAGER
 5585 5.9133000K APARTMENT HOUSE MANAGER
 5595 5.9133000K MANPOWER ADVISER
 5605 5.9133000K GUIDE, TRAVEL
 5615 5.9133000K LIBRARY ASSISTANT
 5625 5.9133000K CHIROPRACTOR
 5635 5.9133000K OPTOMETRIST
 5645 5.9133000K VETERINARIAN
 5655 5.9133000K FOREIGN LANGUAGE INTERPRETER
 5665 5.9133000K INTERIOR DECORATOR
 5675 5.9133000K COMPENSATION ADVISOR
 5685 5.9133000K CRM DIRECTOR
 5695 5.9133000K FUNERAL DIRECTOR
 5705 5.9133000K CLAIM ADJUSTER
 5715 5.9133000K COUNSELOR*
 5725 5.9133000K EXECUTIVE HOUSEKEEPER
 5735 5.9133000K GROUP WORKER
 5745 5.9133000K REHABILITATION COUNSELOR
 5755 5.9133000K POLITICIAN
 5765 5.9133000K PAROLE OFFICER
 5775 5.9133000K PSYCHIATRIST PSYCH DOCTOR
 5785 5.9133000K SPEECH AND HEARING CLINICIAN
 5795 5.9133000K GOVERNMENT OFFICIAL
 5805 5.9133000K LABOR ARBITRATOR
 5815 5.9133000K INTERNIST PHYSICIAN
 5825 5.9133000K PATHOLOGIST
 5835 5.9133000K PHYSICIAN*
 5845 5.9133000K PSYCHIATRIST
 5855 5.9133000K PSYCHOLOGIST
 5865 5.9133000K SURGEON
 5875 5.9133000K DENTIST
 5885 5.9133000K DIRECTOR SOCIAL SERVICE
 5895 5.9133000K CLERGYMAN
 5905 5.9133000K LABORER, GUARD, JANITOR, WATCHMAN, WAREHOUSE
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 5925 5.9133000K PHARMACIST
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860IR	1.0816ANTHROPOLOGIST	188
861IR	1.0816HORTICULTURIST	189
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864IR041.0816OCEANOLOGIST		192
865IR041.0816OCEANOLOGIST		193
866SIA051.0806POLITICAL SCIENTIST		303
867SIA	6SOCIAL SCIENTIST*	304
868SIA054.0806SOCIOLOGIST		305
869FCI050.0806MARKET ANALYST		343
870SAC332.2714COSMETOLOGIST		331
871ISA07H.4815MEDICAL TECHNOLOGIST		171
872IRE012.1080DENTIST		201
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883SIR075.3784PHYSICAL THERAPIST		323
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886SALO6.1285HOME ECONOMIST		325
887SIA075.3785PROFESSIONAL NURSE		306
888SIA155.1085SOCIAL WORKER		307
889SCE187.1185PUBLIC HEALTH SERVICE OFFICER		284
890SAIC79.3784DENTAL ASSISTANT		340
891SAIC78.3684DENTAL HYGIENIST		341
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893SIE077.1684DISTRIBUTION		312
894IRCC29.3814LABORATORY TECHNICIAN		218
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896RIC409.1814TREE SURGEON		065
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898RIC222.3873SHIPPING/RECEIVING CLERK		075
899CRI219.3883BILLER		411
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901CRI213.7823TABULATING MACHINE OPERATOR		413
902CRI207.7823DUPLICATING MACHINE OPERATOR		414
903CRS206.3883FILE CLERK		415
904CIS216.4883CALCULATING MACHINE OPERATOR		425
905CIS219.4883ACCOUNTING/STATISTICAL CLERK		426
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907CIE209.6883MICROREADER		430
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915CIS215.3884AUTO WRITING MACHINE OPERATOR		421
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918CIE	4OFFICE WORKER*	428
919CIE215.4884PAYROLL CLERK		429
920CIR215.3884ACCOUNTING MACHINE OPERATOR		432
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922CIS210.3884BOOKKEEPER		443
923CSA201.3684SECRETARY*		445

924CS 1.3684MEDICAL SECRETARY
 925CS 4.0000DATA PROCESSING WORKER
 926 232.2684MAIL CLERK
 927 201.3684PERSONNEL SECRETARY
 928AIS141.0115FASHION ILLUSTRATOR
 929SIC155.1685YMCA SECRETARY
 930ERS184.1685WAREHOUSE MANAGER
 931ESC186.1185BRANCH MANAGER
 932ESC169.1185SALARY & WAGE ADMINISTRATOR
 933LXC169.1685OFFICE MANAGER
 934CEIC20.1185FINANCE EXPERT
 935CES160.1885ACCOUNTANT
 936CES168.1685CREDIT MANAGER
 937A14CC1.0116ARCHITECT
 938FSD1012.1685SYSTEMS ANALYST, BUSINESS EDP
 939CIS279.3884ESTIMATOR BOOK PUBLISHING
 940ESC MANAGER/ADMINISTRATOR*
 941FSI185.1684RETAIL MERCHANT
 942SEIC40.1186EDUCATIONAL ADMINISTRATOR
 943SIC91.1186SCHOOL SUPERINTENDENT
 944SCC187.1684LIQUOR STORE MANAGER
 945ECS162.1584FLOORIST DEALER
 946ECS162.1584ART GOODS DEALER
 947ECS162.1584FURNITURE DEALER
 948CSR419.3684TRAFFIC CHECKER
 949CIS160.1885CERTIFIED PUBLIC ACCOUNTANT
 950FSI195.1186DIRECTOR OF ADMINISTRATIVE SERVICES
 951ESC166.1185DIRECTOR, INDUSTRIAL RELATIONS
 952FCI186.1185BANKER
 953SIE166.1185PERSONNEL DIRECTOR
 954SIE168.1685BUILDING INSPECTOR
 955SRE187.1685BUILDING SUPERINTENDENT
 956SEA188.1185FOREIGN SERVICE OFFICER
 957SCC187.1185CHAMBER OF COMMERCE EXECUTIVE
 958ESC191.2684INSURANCE INVESTIGATOR
 959ESI166.1684DIRECTOR, COMPENSATION & BENEFITS
 960SIE168.1684CUSTOMS INSPECTOR
 961SFC166.1684EMPLOYEE BENEFITS APPROVER
 962SFC319.1384FOOD SERVICE MANAGER
 963SER166.1684HEALTH & WELFARE COORDINATOR
 964REI530.1324FOREMAN
 965CSE225.0624TELEPHONE OPERATOR
 966CIR203.5883TELEGRAPH OPERATOR
 967CRS211.4683TELLER
 968SEN241.1685CLAIM ADJUSTER
 969ESC183.1185PRODUCTION MANAGER
 970ESC184.1185OPERATIONS MANAGER
 971ESI185.1684SHOE STORE MANAGER
 972ESC191.1185BUSINESS MANAGER
 973AES164.1185ADVERTISING MANAGER
 974AES164.0685ADVERTISING MAN
 975FAS110.1186LAWYER, JUDGE, ATTORNEY
 976ESC169.1185LABOR ARBITRATOR
 977IRCC2.0816ADMINISTRATOR, ENGINEER
 978RIE620.1314GARAGE FOREMAN
 979IEC020.1885ACTUARY

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SAMP RUN *C*A*O*S*

RAW MATRIX

	REAL	INVE	ARTI	SOCI	ENTE	CONV	TOTA
ACTI	3	2	0	4	2	2	13
COMP	1	8	3	0	0	2	14
OCCU	1	1	2	1	0	1	6
SLF1	2	4	2	3	1	1	13
SLF2	3	2	4	4	4	3	20
TOTA	10	17	11	12	7	9	66

CONVENTED MATRIX

	REAL	INVE	ARTI	SOCI	ENTE	CONV	TOTA
ACTI	27	18	0	36	18	18	117
COMP	9	72	27	0	0	18	126
OCCU	7	7	14	7	0	7	42
SLF1	40	80	40	60	20	20	260
SLF2	60	40	80	80	80	60	400
TOTA	143	217	161	183	118	123	945

THE HIGHEST VALUE IS INVE VALUE 217

THE SECCND VALUF IS SOCI VALUE 183

THE THIRDO VALUE IS ARTI VALUE 161

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ACTI	COMP	OCCU	SLF1	SLF2	TOTA	REAL	INVE	ARTI	SOCI	ENTE
117	126	42	260	400	945	143	217	161	183	118

TI	SOCI	ENTE	CONV	TOTA
C	4	2	2	13
3	C	0	2	14
2	1	0	1	6
2	3	1	1	13
4	4	4	3	20
11	12	7	9	66

TI	SOCI	ENTE	CONV	TOTA
C	36	18	18	117
27	C	0	18	126
14	7	0	7	42
40	60	20	20	260
40	80	80	60	400
61	183	118	123	945

VE VALUE 217

I VALUE 183

VALUE 161

MD LO	ACTI	COMP	OCCU	SLF1	SLF2	TOTA	REAL	INVE	ARTI	SOCI	ENTE	CONV	TOTA
4 3	117	126	42	260	400	945	143	217	161	183	118	123	945

APPENDICES

Appendix A	Holland Letter
Appendix B	CAOS
Appendix C	Description of CAOS Student Printout

CONSULTING PSYCHOLOGISTS PRESS, INC.

577 College Ave., Palo Alto, Calif.



Tel. 326-4448, Area Code 415

May 29, 1974

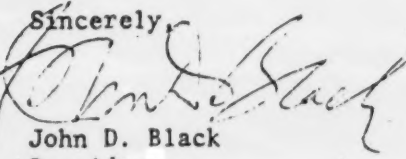
Ms. Judy Battenschlag
Director
Career Achievement Skills Program
Pontiac School District
1830 West Square Lake Road
Pontiac, Michigan 48053

Dear Ms. Battenschlag:

Permission is hereby granted you to adapt and to program for computer scoring the Self-Directed Search and related materials by John L. Holland in a research program known as the Career Achievement Skills Training with the understanding that the attached statement or a substantial equivalent will accompany any printed materials utilizing the SDS or the Occupations Finder.

It is further understood that any adapted materials will not be sold without further written authorization from us.

Sincerely,



John D. Black
President

JDB/jes

enc.

JUNIOR HIGH FINAL VERSION

Student Name _____ Date _____

School _____

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Teacher _____

Class Hour _____

CAOS



COMPUTER ASSISTED OCCUPATION SEARCH

Career Achievement Skills Program

Developed cooperatively by Judy Battenschlag, Director of CAST

Al Pavlish, Assistant Director of Pontiac Research and
Development Department

Pontiac, Michigan

The following material is essentially derived from the works of Dr. John Holland. The majority of the material comes from Dr. Holland's Self Directed Search (SDS) instrument.

The SDS is copyrighted by Consulting Psychologist's Press, 577 College Ave., Palo Alto, California 94306.

This material is being tested as part of the Career Achievement Skills Training (CAST), a revised Research and Development Project in Vocational Education conducted under Part C of Public Law 90576; a supplementary allocation to the Michigan Department of Education, under OE Letter of Assurance #U-261041-L, subcontracted under Grant Award CED-O-72-0749.

The purpose of modifying Dr. Holland's SDS instrument was to investigate the following questions:

1. Can the instrument be simplified to be useful for junior high and elementary school students?
2. Can the instrument be modified to facilitate computer scoring of student responses?
3. Can the instrument be modified to be consistent with the processes and objectives of the CAST programs?

This modification of Dr. Holland's instrument is solely intended for limited use as part of the research and development of the CAST program. Anyone wishing to use this material in any way must receive written permission from:

Dr. John Black or
Dr. John Holland
577 College Avenue
Palo Alto, California
94306

ACTIVITIES

Darken the circle (●) under "L" (for LIKE) for those activities you have enjoyed doing or would like to do. Total the number of circles you have darkened.

L REALISTIC

- ☐ Fix electrical things
- ☐ Repair cars
- ☐ Fix mechanical things
- ☐ Build things with wood
- ☐ Drive a truck or tractor
- ☐ Use metalworking or machine tools
- ☐ Work on a hot, rod motorcycle or bicycle
- ☐ Build models
- ☐ Cut out and sew a garment from a pattern
- ☐ Take courses in cooking and sewing
- ☐ Plant and care for a flower or vegetable garden

☐ TOTAL NO. OF L's

L INVESTIGATIVE

- ☐ Read science books or magazines
- ☐ Work in a science laboratory
- ☐ Work on a science project
- ☐ Build rocket models
- ☐ Work with a chemistry set
- ☐ Solve math puzzles
- ☐ Play chess
- ☐ Work with chemicals
- ☐ Take higher math courses
- ☐ Study plants and animals
- ☐ Read about special subjects on my own

☐ TOTAL NO. OF L's

L ARTISTIC

- ☐ Sketch, draw or paint
- ☐ Attend plays
- ☐ Design furniture or buildings
- ☐ Play in a band, group or orchestra
- ☐ Practice a musical instrument
- ☐ Go to concerts or musicals
- ☐ Read popular fiction books
- ☐ Draw portraits
- ☐ Read plays
- ☐ Read or write poetry
- ☐ Take Art courses

☐ TOTAL NO. OF L's

L SOCIAL

- ☐ Write letters to friends
- ☐ Attend services at a church or temple (ex. - scouts, church youth groups, youth divisions of political parties, recreation leagues)
- ☐ Help others with their personal problems
- ☐ Take care of children
- ☐ Go to parties
- ☐ Dance
- ☐ Read books about people and the way they act
- ☐ Play team sports
- ☐ Go to sports events
- ☐ Make new friends

☐ TOTAL NO. OF L's

L ENTERPRISING

- ☐ Convince others to do what you want
- ☐ Sell something
- ☐ Discuss current events
- ☐ Operate my own service or business
- ☐ Attend a weekend meeting
- ☐ Give talks
- ☐ Serve as an officer of any group
- ☐ Show others how to do or make something
- ☐ Meet important people
- ☐ Be a group leader
- ☐ Help a friend running in a school election

☐ TOTAL NO. OF L's

L CONVENTIONAL

- ☐ Keep your desk and room neat
- ☐ Type papers or letters for yourself or for others
- ☐ Add, subtract, multiply and divide numbers in business
- ☐ Operate office machines of any kind
- ☐ Keep detailed records of expenses
- ☐ Take a Typing course
- ☐ Work in the office
- ☐ Take a Business Math course
- ☐ Assist the teacher with correcting papers
- ☐ Put letters, reports, records in order
- ☐ Write business letters

☐ TOTAL NO. OF L's

COMPETENCIES

Darken the circle (●) under "Y" (for Yes) for those activities you can do well.
Total the number of circles you have darkened.

Y REALISTIC

- ☐ I have used wood shop power tools such as a power saw and lathe
- ☐ I can adjust engine parts
- ☐ I have operated metal shop power tools such as a drill press or grinder
- ☐ I can refinish furniture or woodwork
- ☐ I can cook a meal using recipes
- ☐ I can cut out a dress using a pattern
- ☐ I can grow flowers and/or vegetables
- ☐ I can plan and shop for a week's meals
- ☐ I can make simple electrical repairs
- ☐ I can repair children's toys

☐ TOTAL NO. OF Y's

Y INVESTIGATIVE

- ☐ I can name three foods that are high in protein content
- ☐ I understand how electromagnet works
- ☐ I understand photosynthesis
- ☐ I can use multiplication tables
- ☐ I can use a ruler to measure
- ☐ I can locate a street using a map
- ☐ I can identify some constellations of the stars
- ☐ I can describe the job of the white blood cells
- ☐ I understand the use of cross references in a dictionary or encyclopedia
- ☐ I use the telephone directory to locate people and services

☐ TOTAL NO. OF Y's

Y ARTISTIC

- ☐ I can play a musical instrument
- ☐ I can sing in a choir
- ☐ I can perform as a musical soloist
- ☐ I can act in a play
- ☐ I can do a painting or sculpture
- ☐ I can do modern or ballet dancing
- ☐ I can sketch people so that they can be recognized
- ☐ I can make pottery
- ☐ I can design clothing, posters, or furniture
- ☐ I write stories or poetry well

☐ TOTAL NO. OF Y's

Y SOCIAL

- ☐ I am good at explaining things to others
- ☐ I have helped earn money for charity or a walkathon
- ☐ I cooperate and work well with others
- ☐ I can be a good host (hostess)
- ☐ I can teach children easily
- ☐ I can plan entertainment for a party
- ☐ I am good at helping people who are upset or troubled
- ☐ I have worked as a volunteer aide in a hospital, clinic, or home
- ☐ I am a good judge of people
- ☐ I can plan school or church social affairs

☐ TOTAL NO. OF Y's

Y ENTERPRISING

- ☐ I have been elected to an office in school
- ☐ I can help others do or make something
- ☐ I am good at getting people to do things my way
- ☐ I know how to set a goal and plan a course of action to reach it
- ☐ I know how to get help when I can't do a job by myself
- ☐ I have acted as a spokesman for some group in presenting suggestions or complaints to a person in authority
- ☐ I won an award for work as a salesman or leader
- ☐ I have started a club, group, or gang
- ☐ I can figure out different ways of getting a job done
- ☐ I know how to be a successful leader

☐ TOTAL NO. OF Y's

Y CONVENTIONAL

- ☐ I can organize the tools and materials in a school or home shop
- ☐ I can predict and plan most of my income and expenses for the next month
- ☐ I can alphabetize and shelve books in a library
- ☐ I can put letters or reports in order
- ☐ I have held an office job
- ☐ I can organize my room
- ☐ I can do a lot of paper work in a short time
- ☐ I can use an adding machine
- ☐ I have been treasurer of a group
- ☐ I can keep records of my expenses

☐ TOTAL NO. OF Y's

OCCUPATIONS

This is an inventory of your feelings and attitudes about many kinds of work.
Show the occupations that interest or appeal to you by darkening the circle (●)
under the "Y" for Yes.

Y REALISTIC

- ☐ Airplane Mechanic
- ☐ Fish and Wildlife Specialist
- ☐ Green House Operator
- ☐ Medical Lab Technician
- ☐ Construction Inspector
- ☐ Radio Operator
- ☐ Filling Station Attendant
- ☐ Tool Designer
- ☐ Sewing Instructor
- ☐ Electrician

☐ TOTAL NO. OF Y's

Y INVESTIGATIVE

- ☐ Biologist - Studies the human body
- ☐ Census Taker
- ☐ Anthropologist - Studies earth's
history of men
- ☐ Zoologist - Works with animals
- ☐ Chemist - Works with chemicals
- ☐ Market researcher - Studies people's
opinions
- ☐ Writer of Scientific Articles
- ☐ Investigator of fire or auto
insurance claims
- ☐ Geologist - Works with rocks and
minerals
- ☐ Botanist - Works with plants

☐ TOTAL NO. OF Y's

Y ARTISTIC

- ☐ Poet
- ☐ Musician
- ☐ Author of Books
- ☐ Commercial Artist
- ☐ Newspaper Art, Music or Drama Critic
- ☐ Art Gallery Owner
- ☐ Singer
- ☐ Composer
- ☐ Writer of Plays
- ☐ Theatre Stage Manager

☐ TOTAL NO. OF Y's

Y SOCIAL

- ☐ Religious Worker
- ☐ High School Teacher
- ☐ Nurse
- ☐ Speech Therapist
- ☐ Physical Education Teacher
- ☐ Playground Director
- ☐ Psychologist
- ☐ Social Science Teacher
- ☐ Asst. City School Superintendent
- ☐ Counselor

☐ TOTAL NO. OF Y's

Y ENTERPRISING

- ☐ Advertising Agent
- ☐ Store Owner
- ☐ Television Producer
- ☐ Hotel Manager
- ☐ Business Executive
- ☐ Restaurant Worker
- ☐ Master of Ceremonies
- ☐ Salesman
- ☐ Announcer
- ☐ Political Campaign Manager

☐ TOTAL NO. OF Y's

Y CONVENTIONAL

- ☐ Librarian
- ☐ Treasurer
- ☐ Traffic Manager
- ☐ Mathematician
- ☐ Court Secretary
- ☐ Bank Teller
- ☐ Tax Expert
- ☐ Computer Operator
- ☐ Payroll Clerk
- ☐ Bank President

☐ TOTAL NO. OF Y's

SELF-ESTIMATES

Rate yourself on each of the following traits as you see yourself when compared with other persons your own age. Give the most accurate estimate of how you see yourself. Circle the appropriate number and try not to rate yourself the same in each ability.

	MECHANICAL ABILITY	SCIENTIFIC ABILITY	ARTISTIC ABILITY	TEACHING ABILITY	SALES ABILITY	CLERICAL ABILITY
HIGH	5	5	5	5	5	5
	4	4	4	4	4	4
AVERAGE	3	3	3	3	3	3
	2	2	2	2	2	2
LOW	1	1	1	1	1	1
	0	0	0	0	0	0

	MANUAL ABILITY	MATH ABILITY	MUSICAL ABILITY	FRIEND- LINESS	MANAGERIAL ABILITY	OFFICE ABILITY
HIGH	5	5	5	5	5	5
	4	4	4	4	4	4
AVERAGE	3	3	3	3	3	3
	2	2	2	2	2	2
LOW	1	1	1	1	1	1
	0	0	0	0	0	0

Description of CAOS Student Printout

- Line 1 - Students name
- 2 - Job code indicating combination of highest preference -
For example, this students code 2 4 3 indicates that
his job preference category include those jobs highest
in investigative characteristics, next highest in social
characteristics, and least highest in artistic characteristics.
-Int - 2 and Ed Lel 3 indicates the student marked the 2nd
interest (outdoor) area circle and the 3rd education (high
school plus some training) level circle on his CAOS answer
sheet.
- 3 - In this section all the jobs falling under the job code 243
are printed out. The first number given is a computer number.
The three letters I S A are the job code abbreviation. The
next number is the DOT (Dictionary of Occupational Titles 1965).
The next number indicates the level of education as indicated
in the DOT classification.
- 4 - The same job code is used only in a different combination thus
and 5 producing a new job list.
- 6 - Now the jobs are printed out according to interest area (outdoors)
and education level (high school plus training).

CO ER ASSISTED OCCUPATION SEARCH

3 32500 JOHNIS WILL
 5 FIRST CHOICE 2 INVE SECOND CHOICE 4 SCOT THIRD CHOICE 3 ARTI INT- 2 ED LVL- 3

3 JOB CODE 243 HAS 4JOB TITLES
 168 ISA 70.108 6 PHYSICIAN*
 169 ISA 70.108 6 PSYCHIATRIST
 170 ISA 45.088 6 PSYCHOLOGIST
 171 ISA 78.381 5 MEDICAL TECHNOLOGIST

4 NEW JOB CODE 234

JOB CODE 234 HAS 2JOB TITLES
 152 IAS 50.088 6 ECONOMIST
 153 IAS 70.108 6 INTERNIST PHYSICIAN

5 NEW JOB CODE 423

JOB CODE 423 HAS 8JOB TITLES
 302 SIA 90.228 6 COLLEGE PROFESSOR
 303 SIA 51.088 6 POLITICAL SCIENTIST
 304 SIA 0.000 6 SOCIAL SCIENTIST*
 305 SIA 54.088 6 SOCIOLOGIST
 306 SIA 75.378 5 PROFESSIONAL NURSE
 307 SIA 195.108 5 SOCIAL WORKER
 308 SIA 195.108 5 GROUP WORKER
 309 SIA 45.108 5 REHABILITATION COUNSELOR

6 INTEREST AREA- 2 OUTD EDUCATION LEVEL- 3 TECH

499 RCS 859.281 3 PLASTER
 500 RCS 850.781 3 MINER
 501 RCE 929.883 3 TRACTOR OPERATOR
 510 RCS 911.887 3 SAILOR SEAMAN
 515 RCS 861.381 3 BRICKLAYER
 516 RIE 866.381 3 ROCKER

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